

PATENT ABSTRACTS OF JAPAN

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(22) Date of filing : 06.04.1988 (72) Inventor : YABE SHINICHI
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(54) POWDERED DETERGENT COMPOSITION

(57) Abstract:

PURPOSE: To suppress peculiar odor emitted from an enzyme and improve the enzyme resistance to the chlorine present in city water, by adding a particular amt. of each of a sulfite and a compd. having inclusion capability to an enzyme- contg. powdered detergent.

CONSTITUTION: A powdered detergent having improved detergency is produced by incorporating a protease, a cellulase, a lipase, etc. 0.1-5wt.% sulfite (e.g., sodium sulfite) and 0.1-5wt.% compd. having inclusion capability are added to the detergent to suppress enzyme odor. Representative examples of the compds. having inclusion capability include β -cyclodextrin, methylated β -cyclodextrin, α -cyclodextrin and γ -cyclodextrin. Thus it is possible to mask enzyme odor without the necessity of increasing the amt. of a perfume or using a special perfume.

LEGAL STATUS

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CLAIMS

(57) [Claim(s)]

[Claim 1] The powder cleaning agent constituent characterized by making the powder cleaning agent containing an enzyme contain 0.1 - 5 % of the weight of compounds which have 0.1 - 5 % of the weight of sulfites, and inclusion ability.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[Industrial Application]

this invention relates to a powder cleaning agent constituent and the powder cleaning agent constituent which suppressed the characteristic smell emitted from an enzyme in more detail.

[Description of the Prior Art]

Although the enzyme else [, such as a surfactant and a builder,] is blended with the powder detergent for garments, there is a characteristic smell in an enzyme. Although perfume is generally added by the detergent and this enzyme smell is masked considerably, masking is no longer enough performed with the perfume vaporization by preservation. The method of choosing increase in quantity or a perfume component is learned in perfume as a method of solving this problem. However, the scent of a detergent becomes strong too much, and perfume is limited, and the flexibility of the latter method (JP,57-85900,A, JP,58-117295,A) of the blending of perfumes decreases, and, as for the former method, it is not desirable. Therefore, it is necessary to suppress an enzyme smell with meanses other than methods, such as increase in quantity of the above perfume, and selection.

[The means for solving a technical problem]

Wholeheartedly, as a result of research, when this invention persons used together the compound which has a sulfite and inclusion ability and it added, they found out that the aforementioned technical problem could be solved and completed this invention.

That is, this invention offers the powder cleaning agent constituent characterized by making the powder cleaning agent containing an enzyme contain 0.1 - 5 % of the weight of compounds which have 0.1 - 5 % of the weight of sulfites, and inclusion ability.

As a sulfite used for this invention, a sodium sulfite, potassium sulfite, a magnesium sulfite, a sodium bisulfite, etc. are mentioned. A sodium sulfite is desirable especially. A sulfite is preferably blended 0.5 to 3% into a constituent 0.1 to 5% of the weight (following % and brief sketch). It is known for a U.S. Pat. No. 3940341 specification, JP,55-27378,A, JP,62-68898,A, etc. that there is an operation which prevents deactivation of the enzyme by the chlorine of the tap water of a under [that a sulfite stabilizes the enzyme in a powder detergent and wash]. However, in a sulfite independent, although an enzyme is stabilized, an enzyme smell cannot fully be suppressed. When it uses together with a clathrate compound, an enzyme smell becomes that there is nothing, and moreover, the stability of the enzyme to the chlorine in tap water also improves.

As a compound which has the inclusion ability used for this invention, beta-cyclodextrin derivative like beta-cyclodextrin and a methylation beta-cyclodextrin, alpha-cyclodextrin, gamma-cyclodextrin, etc. are mentioned. beta-cyclodextrin is desirable above all. A clathrate compound is preferably blended 1.0 to 3.0% 0.1 to 5% into a constituent. Although a clathrate compound can be corned and used with an extending agent, a binder, etc. as powder, it is desirable to use as fine particles in respect of enzyme smell suppression. In addition, even if it carries out the inclusion of the clathrate compound and it uses perfume, since the direction which was enough attained, and made such and was used can also expect the effect of enzyme smell masking, the purpose of this invention is desirable.

Especially an enzyme is not limited in this invention and they are a protease and a cellulase. Lipase etc. demonstrates an effect also to any. usually, the thing currently used for the detergent -- it can use -- for example, the alcalase of a NOBOINDA story company -- it rusts and there are API-21 of NAZE, S PERAZE, cell ZAIMU, MAKUSATAZE of GISUTOPUROKADESU, and Showa Denko etc. An enzyme is usually blended 0.1 to 3% into a detergent.

Especially other detergent composition is limited. Although there is no **, generally the detergent in Japan Alkylbenzene sulfonic-acid soda, Alkyl-sulfuric-acid soda, olefin sulfonic-acid soda, alkyl ether sodium sulfate, Surfactants, such as soap and polyoxyethylene alkyl ether 10 - 50%, Inorganic builders, such as sodium carbonate, silicate of soda, sodium sulfate, and a zeolite 30 - 80%, And although it consists of anti-redeposition agents, such as a polyethylene glycol and a carboxymethyl cellulose, a fluorescence color, and perfume and JI long-chain alkyl type quarternary ammonium salt is added in a percarbonate, fault boron acid chloride, and the flexible detergent with the bleaching detergent The cleaning agent constituent of this invention can also be considered as such combination.

[Effect of the Invention]

By this invention, while being able to lose most enzyme smells in the inside of detergent powder or wash liquid, the stability of the enzyme to the chlorine in tap water can be improved.

[Example]

Although an example is given to below and this invention is explained to it, this invention is not limited to these examples.

In addition, the section in an example and % are weight criteria, respectively.

An example 1 <powder detergent constituent A> sodium dodecyl benzenesulfonate 16 % SOFUTA Norian 120 2.0% beef tallow fatty-acid sodium 2.5% sodium carbonate 10.0% No. 2 specific silicate A 7.5% 4A type zeolite 30 % sodium sulfate A balance polyethylene-glycol 6000 1.0% carboxymethyl cellulose 1.2% fluorescence color (Tinopal CBS) 0.3% enzyme (alcalase) 1.0% moisture 4.5%

Composition shown in Table 1 to the constituent 95 above-mentioned section. It adjusted. Balance was performed by the salt cake. About the obtained constituent, the enzyme smell of the activity of an enzyme, a powder detergent, and each wash liquid was evaluated by the following methods.

<Enzyme activity evaluation in wash liquid> After adjusting isolation available chlorine concentration to 3 ppm, having used the amount of the detergent used 0.20%, and having used water temperature as 20 degrees C, enzyme activity was evaluated using the Anthon hemoglobin method. Relative percent show an evaluation value.

<Evaluation of the enzyme smell of a powder detergent> 3 was put into the wide mouth glass bottle of 3 50cm of detergents the capacity of 100cm, and it covered, and saved for 20 days at -5 degrees C and 30 degrees C, and the enzyme smell was measured by organic-functions evaluation by six persons' panelist.

O -- There is not an enzyme smell.

O -** -- There is an enzyme smell a little.

** -- An enzyme smell clarifies.

<Evaluation of the enzyme smell in wash liquid> Using the sample saved at the above-mentioned 30 degrees C, it washed on the following wash conditions and four panelists estimated the smell of wash liquid.

Washing machine It is amount of water 3.0kg of Toshiba Galaxies. The amount of 30l. detergents 40g water temperature 20-degree-C wash time 10-minute garments 1.2kg (cotton shirt 720g, traveler's check shirt 480g)

In addition, wash liquid organic-functions evaluation was evaluated after [of wash] 10 minutes.

- There is not an error-criterion enzyme smell. A few is carried out [smell / one point enzyme]. A two-point enzyme smell clarifies. Three points.

表

1

| | | 本発明品 | | | | 比較品 | | |
|-----------|---------------------------------|------|-----|-----|-----|-----|-----|-----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 組成 (部) | 組成物A | 95 | ← | ← | ← | ← | ← | ← |
| | Na ₂ SO ₃ | 1.0 | 1.5 | | | | 1.0 | |
| | NaHSO ₃ | | | 1.0 | 1.5 | | | 1.0 |
| | 包接化合物* | 1.0 | 2.0 | 1.0 | 2.0 | 1.0 | | |
| | 亡硝 | バランス | ← | ← | ← | ← | ← | ← |
| 評価 | 酵素活性 (%) | 100 | 100 | 100 | 100 | 0 | 80 | 80 |
| | 洗剤粉末の酵素臭 | -5℃ | ○ | ○ | ○ | ○~△ | ○~△ | ○~△ |
| | | 30℃ | ○~△ | ○ | ○~△ | △ | △ | △ |
| | 洗濯液の酵素臭 | 5 | 4 | 5 | 4 | 8 | 11 | 12 |

* 日本食品加工株式会社製

セルデックスN(β-サイクロデキストリン)

Example 2 The powder detergent constituent A 97 section of an example 1, the sodium-sulfite 1.5 section, and the powder 1.5 section of the perfume clathrates adjusted as follows were mixed, and the powder detergent was obtained. 3 was put into the wide mouth glass bottle of 3 100cm 50cm of these powder detergents, and it covered, and although saved for 20 days at 40 degrees C, there was not the enzyme smell at all. Moreover, although wash liquid organic-functions evaluation was performed by the same method as an example 1 using the saved sample, there was not the enzyme smell at all.

<Perfume clathrates> 18.0g (beta-CD) of cell DEKKUSU N by Japan food-processing incorporated company is added into 200ml of 60-degree C warm water, and beta-CD is dissolved completely. 2.3g added to this and lemon muguet tone preparation perfume was agitated to it for 3 hours. The settlings of water-insoluble nature were produced after preparation perfume addition, and the inclusion phenomenon was observed. 20g of powder of the perfume clathrates was obtained with freeze drying after filtration.

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TECHNICAL FIELD

[Industrial Application]

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EFFECT OF THE INVENTION

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TECHNICAL PROBLEM

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MEANS

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EXAMPLE

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